C L A I M S

1. Method for the preparation of a chromium-free catalyst comprising Cu and at least one second metal in metallic or oxidic form, comprising the steps of:
   a) preparing a final solution comprising ions of Cu and of at least one second metal, said final solution additionally comprising ions of a complexing agent and having a pH of above 5;
   b) contacting said final solution with inert carrier to form a final solution/carrier combination;
   c) optionally, drying the final solution/carrier combination;
   d) calcining the final solution/carrier combination obtained in step c) or d) to yield Cu and the at least one second metal in oxidic form; and
   e) reducing at least part of the thus obtained oxidic Cu on the carrier.

2. Method according to claim 1, step a) comprising the step of preparing said final solution by combining at least a first solution comprising ions of Cu with at least a second solution comprising ions of at least one second metal.

3. Method according to claim 2, wherein the first and second solutions both comprise ions of the complexing agent in a similar concentration.

4. Method according to any of claims 2 or 3, wherein both the first solution and the second solution have a pH of above 5.

5. Method according to claim 4, wherein the first and the second solution have a similar pH.

6. Method according to any of the preceding claims, wherein said chromium-free catalyst further comprises at least one third metal.

7. Method according to any of the preceding claims, wherein the pH of the final solution is above 6.

8. Method according to any of the preceding claims, wherein the concentration of Cu ions in the final solution is in the range of 0.001-0.3, more preferably of 0.005-0.15 g Cu/mL.

9. Method according to any of the preceding claims, wherein the amount of Cu ions in the final solution is such that a catalyst is obtained comprising 1-50 %wt, more preferably 10 to 30 %wt, and most preferably 15 - 25 %wt Cu.

10. Method according to any of the preceding claims, wherein the concentration of ions of the complexing agent in the final solution is in the range of 0.001-1.5, more preferably of 0.15-0.5 g/mL.

11. Method according to any of the preceding claims, wherein the amount of ions of the complexing agent in the final solution is such that the molar ratio of metal to complexing agent is in the range of 0.1 to 5, more preferably 0.5 to 2, and most preferably 0.75-1.25.

12. Method according to any of the preceding claims, wherein the concentration of ions of the at least one second metal in the final solution is in the range of 0.001-0.3, preferably in the range of 0.005-0.15 g/mL.

13. Method according to any of the preceding claims, wherein the amount of ions of the at least one second metal in the final solution is such that catalyst is obtained with an atomic ratio of Cu to the at least one second metal in the range of 0.01-10, more preferably in the range of 0.1-5, and most preferably in the range of 0.3-3.0.

14. Method according to any of the claims 6-13, wherein the concentration of ions of the at least one third metal in the final

solution is in the range of 0.0001-0.03, preferably in the range of 0.0005-0.015 g/mL.

15. Method according to any of the claims 6-14, wherein the amount of the at least one third metal is such that catalyst is obtained with an atomic ratio of the at least one third metal to Cu in the range of 0.001-0.05, more preferably in the range of 0.001-0.01.

16. Method according to any of the preceding claims, comprising an additional step g) of pulverising the obtained catalyst.

17. Method according to any of the preceding claims, wherein the at least one second metal is chosen from one or more of Fe, Zn, Co, Ni, or a combination thereof.

18. Method according to any of the preceding claims, wherein the at least one third metal is chosen from one or more of Pd, Ru, Pt, Rh, or a combination of two or more thereof.

19. Method according to any of the preceding claims, wherein the inert carrier is chosen from alumina, silica, silica-alumina, titania, magnesia, zirconia, zinc oxide, or any combination thereof.

20. Method according to any of the preceding claims, wherein the inert carrier is present in an amount of 0-95 %wt, more preferably about 50-90 %wt, most preferably 70-85 %wt.

21. Chromium-free catalyst comprising Cu and at least one second metal obtainable by a method according to any of the preceding claims.

22. Chromium-free catalyst according to claim 21, said catalyst comprising at least 5 %wt Cu and having an atomic ratio of Cu to the at least one second metal of 0.1-10.

23. Chromium-free Cu-Zn catalyst supported on silica, zirconia, or magnesia, comprising 5-50 %wt, preferably 10-30 %wt (Cu + Zn) and having a Cu to Zn ratio of 0.1-10 at/at, preferably 0.5-5 at/at, more preferably 1-4 at/at.

24. Chromium-free Cu-Zn catalyst according to claim 23, further comprising as at least one second metal Co or Ni, or a combination thereof.

25. Chromium-free Cu-Zn catalyst according to any of claims 23 or 24, further comprising at least one third metal chosen from Rh, Ru, Pd and Pt, or combinations of two or more thereof.

26. Chromium-free Cu-Zn catalyst according to claim 25 having a ratio of (Cu + Zn) to the at least one third metal of 0.0001-0.5 at/at, preferably of 0.001-0.01 at/at.

27. Chromium-free Cu-Fe catalyst supported on silica, zirconia, or magnesia, comprising 5-50 %wt, preferably 10-30 %wt (Cu + Fe) and having a Cu to Fe ratio of 0.1-10 at/at, preferably 0.5-5 at/at, more preferably 1-4 at/at.

28. Chromium-free Cu-Fe catalyst according to claim 23, further comprising as at least one second metal Co or Ni, or a combination thereof.

29. Chromium-free Cu-Fe catalyst according to any of claims 23 or 24, further comprising at least one third metal chosen from Rh, Ru, Pd and Pt, or combinations of two or more thereof.

30. Chromium-free Cu-Fe catalyst according to claim 25 having a ratio of (Cu + Fe) to the at least one third metal of 0.0001-0.5 at/at, preferably of 0.001-0.01 at/at.

31. Use of chromium-free catalyst according to any of claims 21-30 for the hydrogenation of fatty acids, fatty esters, esters and diesters to fatty alcohols, alcohols and dialcohols, respectively.